

**REMARKS**

Reconsideration and withdrawal of the rejection set forth in the Office Action dated October 12, 2006 is respectfully requested. Claims 1-31 are currently pending this application.

Claims 1-31 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0039467 to Amantea (hereinafter "Amantea"). The applicants respectfully disagree with this rejection.

**Prior Art**

Amantea teaches an optical switch using movable micromechanical cantilevers and evanescent coupling. The Examiner asserts at page 2 of the Office Action that "Amantea discloses a partially flexible substrate (318 & 323)..." Amantea respectively describes the elements 318 and 323 as bimaterial arms 318 and a cantilever arm 323.

**Amantea does not disclose a flexible circuit**

The "flexible" portion of the Amantea device is a movable cantilever arm coupled to a switched waveguide. As described in the Abstract, "The movable cantilever arm may be formed with bimaterial arms that move the switched waveguide in response to heat or a piezoelectric potential being applied to the arm or they may be formed with an electrostatic plate that moves the arms in response to an electrostatic potential." Thus, although the arms can be flexed, the circuit itself is not flexible. As shown in FIG. 3/4, the switched waveguide 316 has an attached region 316A, a flexible region 316B, and a coupling region 316C. Only a portion of the circuit (316B) could be characterized as flexible. The circuit itself would not be considered flexible, but rather, at best, switchable.

The cantilever arm of Amantea is not a substrate

Amantea states at paragraph 31, "The switched waveguide 316 includes three regions, an attached region 316A, a flexible region 316B and a coupling region 316C. The attached region 316A **is physically coupled to the substrate 324**" (emphasis added). Notably, Amantea does not refer to the substrate 324 as a substrate, but rather as **the** substrate 324. This suggests that Amantea would not agree with the assertion that the bimaterial arms 318 and the cantilever arm 323 are substrates, as the Examiner has suggested. The applicants agree with Amantea in that the cantilever arm cannot reasonably be characterized as a substrate. (The applicants note that Amantea have used the reference numeral 324 to confusingly refer to both the heating element 324 and the substrate 324.)

If the Examiner believes that, contrary to the specific language of Amantea, that the cantilever arm is a substrate, then the applicants respectfully assert that the Examiner is relying upon personal knowledge to support a finding of what is known in the art that is contrary to the language of the cited reference. If the Examiner is relying on personal knowledge to support the finding of what is known in the art, the Examiner must provide an affidavit or declaration setting forth specific factual statements and explanation to support the finding. See 37 CFR 1.104(d)(2).

Amantea can do without the bimaterial arms 318 entirely, which strongly suggests that the bimaterial arms 318 are not the substrates of a circuit. Specifically, Amantea states at paragraph 19 that "the bimaterial arm may be eliminated entirely if an alternative method of actuating the switch—for example, electrostatic attraction or the piezoelectric effect—is used to move the arm instead of bimaterial bending."

In any case, the cantilever arm 323 does not serve as a substrate for a circuit. Although the Examiner has asserted that the cantilever arm 323 is a substrate, the Examiner has not described any circuit formed on the cantilever arm. The cantilever arm 323 is only coupled to a portion of a circuit (i.e., the switched waveguide 316).

Thus, those of skill in the electrical arts would not refer to the cantilever arm 323 as a substrate for a circuit, but more likely as a switching element for a circuit. Indeed, Amantea conforms to this characterization with the language of Amantea in, for example, paragraph 19, where the cantilever arm is specifically referred to as part of a switch.

Heating element of Amantea does not maintain a circuit at constant temperature

The Examiner asserts at page 2 of the Office Action that "Amantea discloses a partially flexible substrate (318 & 323), said partially flexible substrate further comprising a heating element (324). As the Examiner admits, Amantea fails to specifically disclose a heating element for maintaining a flexible circuit at a constant temperature. The Examiner asserts that the Amantea apparatus is structurally indistinguishable from the language "a heating element for maintaining said flexible circuit at a constant temperature" for several reasons, all of which, the applicants respectfully assert, are incorrect.

The Examiner provides the first reason at page 3 of the Office Action as "a heating element for maintaining said flexible circuit at a constant temperature" has not been given patentable weight because it is in narrative form. The Examiner asserts that "in order to be given patentable weight, a functional recitation must be expressed as a "means" for performing the specified function, as set forth in 35 U.S.C. 112, 6th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language (*In re Fuller*, 1929 C.D. 172; 388 O.G. 279)."

Respectfully, the Examiner is incorrect with respect to the law. As described in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), "[T]he absence of the term 'means' creates a rebuttable presumption that section 112, paragraph 6, does not apply. See *Personalized Media Communications, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 703-04 (Fed. Cir. 1998)." Therefore, the courts could, if deemed appropriate after analyzing the specifics of the case and the law, insert an

implied 'means' term into the claim. However, the Examiner does not have the legal authority to require the insertion of the 'means' term into the claim in order to give language functional weight, neither by statute, nor through support from case law such as *In re Fuller*, nor to decide that no patentable weight is to be given due to the absence of the 'means' term.

Respectfully, the Examiner is incorrect with respect to the facts. The applicants have not merely claimed "a woolen cloth having a tendency to wear rough rather than smooth" as in *In re Fuller*. Rather, the claim recites "a heating element for maintaining said flexible circuit at a constant temperature." This language "breathes life and meaning into the claim" and does not "merely describe the necessary result of the foregoing claim language." Courts routinely construe terms with functional connotations as providing structure, and purely functional language that is not subject to 112. For example, in *Sage Products, Inc. v. Devon Industries, Inc.*, 126 F.3d 1420, 44 USPQ2d 1103 (Fed. Cir. 1997), the court stated that "where a claim recites a function, but then goes on to elaborate sufficient structure, material or acts within the claim itself to perform entirely the recited function, the claim is not in means-plus-function format." The applicants respectfully assert that a heating element for maintaining a flexible circuit at a constant temperature includes sufficient structure due to acts (e.g., maintaining at a constant temperature) by the heating element that 112 is not invoked. Moreover, even if 112 were invoked, the applicants would not be required to add the 'means' term to have the claim language receive patentable weight.

The Examiner asserts at page 3 of the Office Action that the language "a heating element for maintaining said flexible circuit at a constant temperature" does not define any structure. However, for the reasons just provided, the applicants respectfully assert that the Examiner is wrong, both legally and factually. The language includes such structure as is necessary to maintain a flexible circuit at a constant temperature. Contrary to the Examiner's assertion, Amantea is incapable of performing this function. Specifically, Amantea uses a heating element to cause a

cantilever arm to bend. Amantea does not describe any means for heating a circuit using the heating element, only the arm. Since the claims require at least sufficient structure to maintain a flexible circuit at a constant temperature, Amantea does not disclose the structure suggested by the Examiner.

### **Prior Art Distinguished**

Claim 1 includes in part the language "a partially flexible substrate, said partially flexible substrate further comprising a heating element for maintaining said flexible circuit at a constant temperature." As described above, Amantea does not disclose a flexible circuit. Moreover, Amantea does not describe a flexible (or partially flexible) substrate. Furthermore, Amantea does not describe a heating element for maintaining a flexible circuit at a constant temperature. In order to render a claim obvious, a prior art reference must teach each and every element of the claim. Since Amantea does not teach each and every element of claim 1, claim 1 is allowable over the cited prior art.

Claims 2-5, which depend from claim 1, are allowable at least for depending from an allowable base claim, and potentially for additional reasons. For example, the Examiner asserts at pages 3-4 of the Office Action, "although Amantea fails to specifically disclose temperature sensors... Amantea does disclose the temperature of the device to be important and therefore it would be important to carefully control the temperature. Therefore, a sensor would have been obvious... in order to tell the heating elements to control or monitor the circuit to maintain constant temperature." Notably, Amantea provides no teachings regarding the importance of controlling or monitoring **the circuit** to maintain constant temperature. So there is no implicit or explicit support in Amantea for the Examiner's assertion that a sensor would have been obvious in order to monitor the circuit to maintain constant temperature. Since there is no support in the cited prior art for the Examiner's assertion, the applicants respectfully request that the Examiner provide an affidavit or declaration setting forth specific factual statements and explanation to support the finding.

Moreover, it is not clear that adding a temperature sensor to the cantilever arm would increase accuracy, since the heating element is applied directly to the arm to achieve a switching function. This is unlike claim 1, which refers to a flexible circuit that is to be preferentially maintained at a constant temperature. Claim 2 includes the language, "the partially flexible substrate further comprises temperature sensors." Since Amantea does not disclose temperature sensors and it is not clear how a temperature sensor would be of any obvious use to Amantea (without hindsight reconstruction), claim 2 is allowable for this additional reason.

Furthermore, the Examiner has provided no suggestion or motivation to include a temperature sensor in a flexible circuit. Amantea discloses neither a flexible circuit nor a temperature sensor in a circuit, and the Examiner has not made up for either of these deficiencies by providing a suggestion or motivation from some other prior art source.

Claim 6 is allowable for reasons similar to those described above with reference to claim 1. In addition, claim 6 includes the language "a flexible heating element." Amantea does not disclose a flexible heating element. Accordingly, claim 6 is allowable for at least this additional reason. Claims 7-13, which depend from claim 6, are allowable at least for depending from an allowable base claim, and potentially for additional reasons.

Claims 14 and 21 are allowable for reasons similar to those described above with reference to claim 6. Claims 15-20 and 22-31 are either directly or indirectly dependent on the independent Claims 14 and 21, respectively. Accordingly, Claims 15-20 and 22-31 are at least allowable as being dependent on an allowable claim.

For the reasons given above, the applicants respectfully submit that Claims 1-31 are in a condition for allowance. The applicant respectfully requests that all rejections be withdrawn and the application be allowed at the earliest date possible. Should the Examiner have any questions or comments, he is encouraged to call the

undersigned at (650) 838-4305 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,  
Perkins Coie LLP

A handwritten signature in black ink, appearing to read 'William F. Ahmann', is written over a horizontal line.

William F. Ahmann  
Reg. No. 52,548

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**Correspondence Address:**

Customer No. 22918  
Perkins Coie LLP  
P.O. Box 2168  
Menlo Park, California 94026  
(650) 838-4300